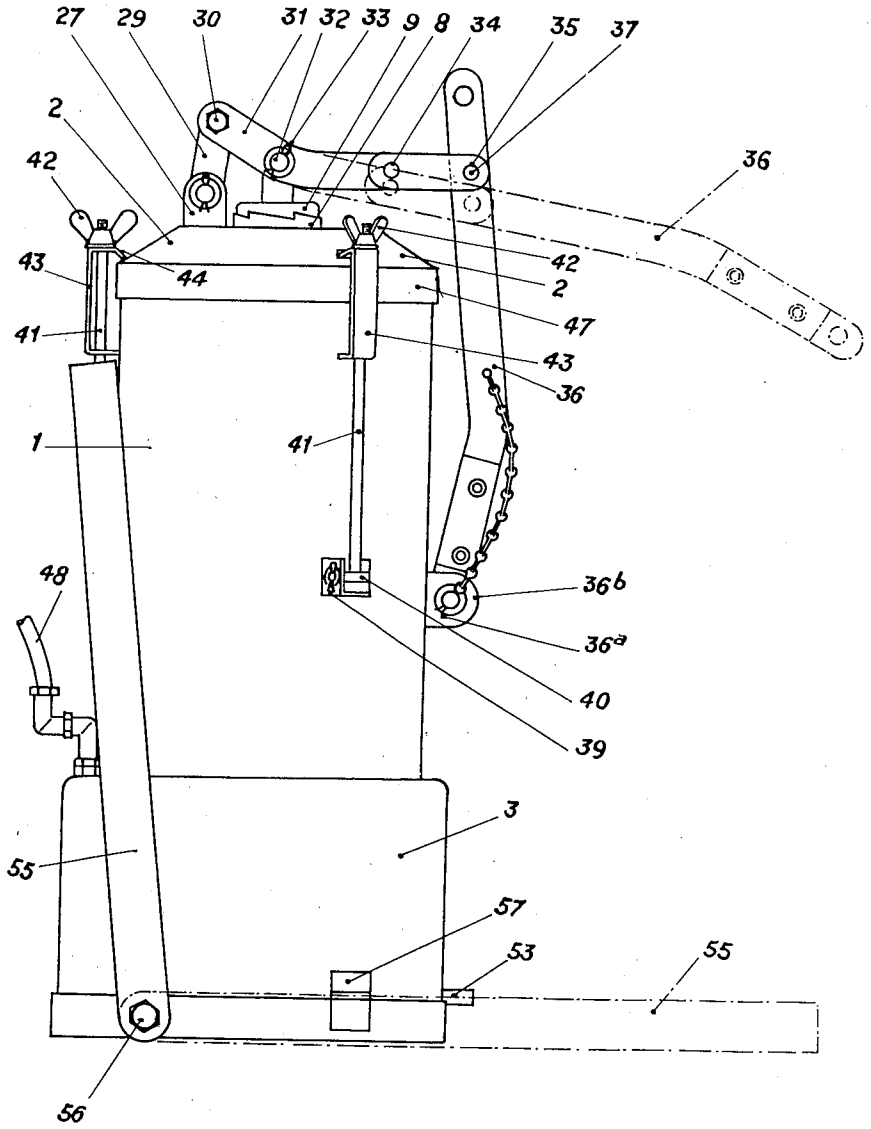
Sept. 20, 1955 O. FROIDEVAUX 2,718,332

LUBRICANT COMPRESSOR

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Fig. 1.



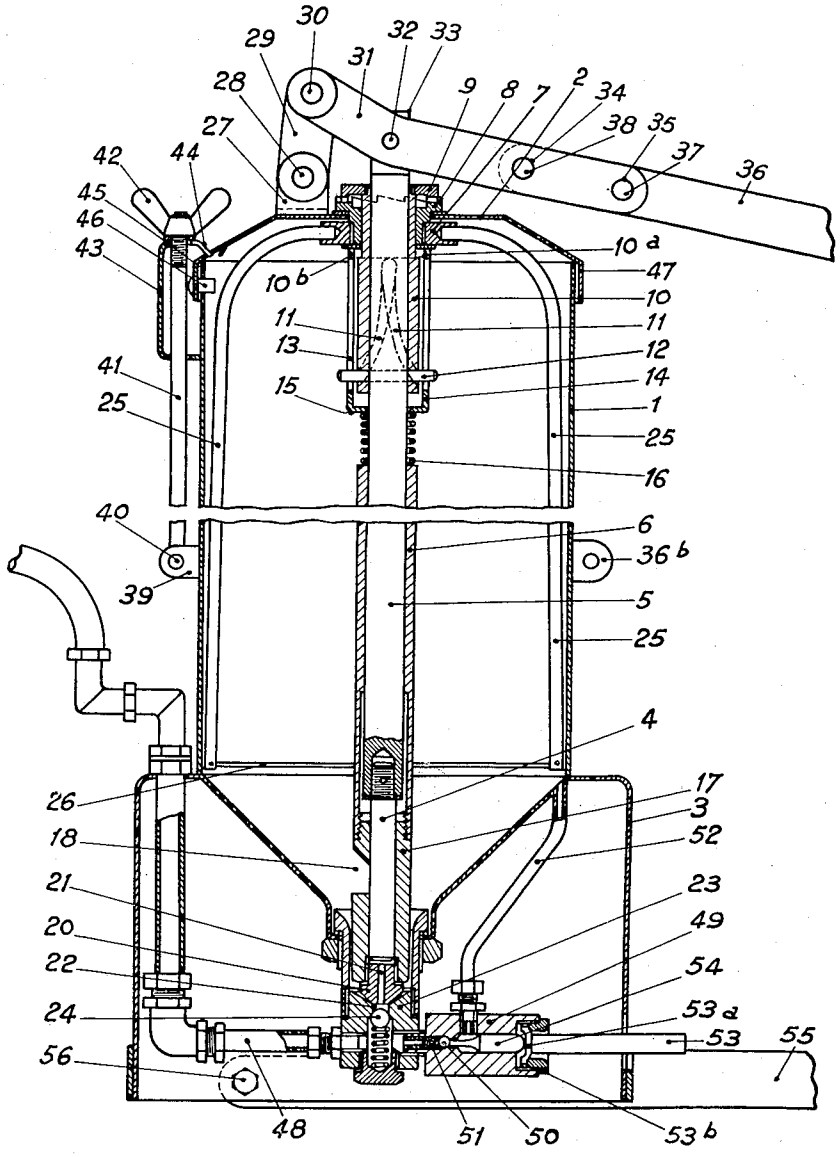
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LUBRICANT COMPRESSOR

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Fig. 2.



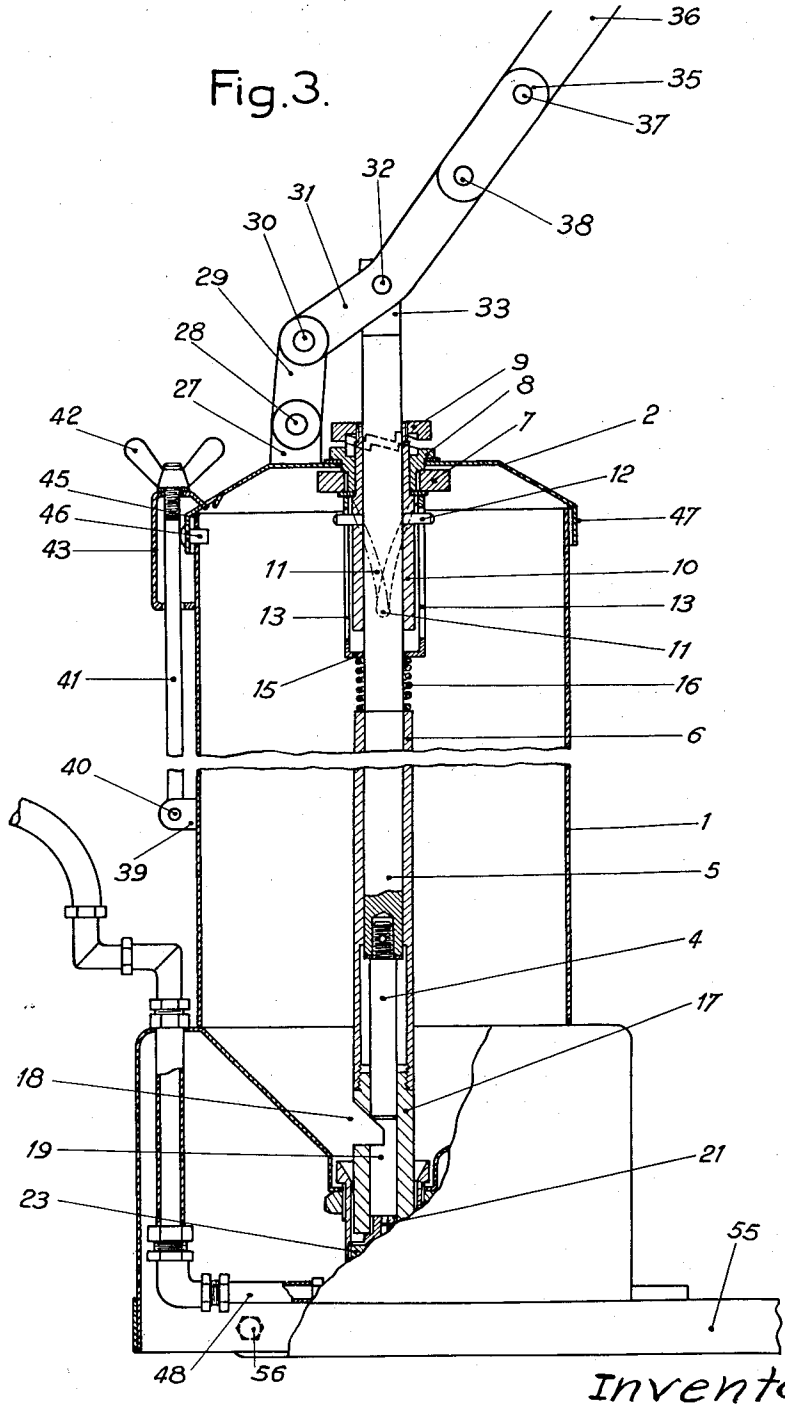
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Fig.3.



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LUBRICANT COMPRESSOR

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Application April 15, 1952, Serial No. 282,377

Claims priority, application France May 2, 1951

4 Claims. (Cl. 222—80)

This invention relates to lubricant compressors and more particularly to portable grease compressors of the type used for example in automobile maintenance shops.

It is one object of this invention to provide a portable grease compressor adapted to force its entire grease content into the points to be lubricated without the slightest inconvenience.

Other objects of the invention consist in so designing the apparatus that it is possible:

To reduce its over-all dimensions in order to facilitate its transfer from one place to another;

To loosen the lubricant adhering to the inner wall of the compressor by means of the mechanism utilized for actuating the pumping device;

To extract from the compressor body, simultaneously with its cover lid, the assembly of parts that control the pumping and scraping functions;

To easily and quickly expand any air trapped in the pump delivery line and to exhaust any air-lock formed in the lubricant itself.

The lubricant compressor according to this invention is remarkable notably in that the mechanism for scraping the inner side wall of the compressor body comprises a pair of arms the lower ends of which are interconnected through a tight wire the function of which consists in spreading and levelling any lubricant loosened from the peripheral wall by the rotational movement of these arms.

The grease compressor according to this invention is also remarkable through the following features taken separately or in combination:

The control lever carries a pivot pin having fulcrumed thereon an actuating arm so that by swinging this arm in either direction relative to the lever the arm may be either operatively connected to the lever or folded down along the compressor body in order to minimize the dimensions of the apparatus in its inoperative condition;

The apparatus bears on the ground through a strap member pivotally mounted on the base of the apparatus and adapted to be folded up along the body thereof on the side opposed to that of the compressor actuating arm through an angular movement of about 270°;

The piston rod of the grease pump carries a diametral pin engaging a large-pitch helical slot formed in a sleeve disposed concentrically with a certain radial clearance about the piston rod, this sleeve being formed at its upper portion with skew-dogs adapted, at the compression stroke of the piston, to mesh with a correspondingly toothed wheel rotatably fast with a ring member carrying the aforesaid scraper arms;

The compressor pump is reciprocated in a tubular element formed laterally adjacent its lower portion with a lubricant intake port and carrying at its bottom end a member formed with a frusto-conical surface in fluid tight engagement with a circular seat of smaller diameter than the piston, this seat being machined in the body of the delivery valve.

The actuating mechanism comprising the pumping piston, the sleeve with its reciprocating piston and the scraper arms is carried by the cover lid of the apparatus so that the complete assembly can be removed as a unit from the apparatus.

A device for expanding and exhausting air-locks is connected to the body of the delivery valve and comprises a one-way valve adapted to be opened by depressing a foot-actuated lever or pedal extending outside the apparatus, so that close-circuit pumping conditions may be obtained.

Other advantages and characteristic features of the invention will become apparent as the following description proceeds with reference to the affixed drawings forming part of the specification in which one form of embodiment of the invention is illustrated by way of example. In the drawings:

Fig. 1 is an elevational view of a compressor according to the invention with parts folded in for transporting it from one place to another;

Fig. 2 is a vertical axial section of same showing the piston at the end of its delivery stroke;

Fig. 3 is a fragmentary view corresponding to Fig. 2 with the piston at the end of its induction stroke.

The apparatus illustrated in the drawings is formed with a tubular cylindrical body **1** acting as a reservoir the upper portion of which receives a cover lid **2** whilst its lower portion is supported by a hollow base **3**.

To the cover lid **2** are fixed the pumping unit and the scraper. The pumping unit consists of a piston **4** of relatively small diameter which is rigid with a rod **5** slidably mounted in a tubular member **6**.

The scraper is carried by a ring member **7** mounted for rotation with a wheel **8** on which a set of skew-dogs are formed and adapted to mesh with respective skew-dogs formed on another wheel **9** fast with a sleeve **10** surrounding with a certain clearance the rod of the compressor piston **4**.

In the wall of the sleeve member **10** are machined a pair of symmetrical helical slots **11, 11** engaged by the radially projecting ends of a diametral pin **12** fitted in the rod **5** of the compressor piston **4**. The length of this transverse pin **12** is also sufficient to engage a pair of vertical slots **13, 13** formed in a tubular element **14** surrounding the sleeve **10** and formed with a bottom wall **15** engaged by the upper end of a compression spring **16** the lower end of which bears on the upper face of the tubular element **6** so as to exert a downward pressure on same.

To the lower end of the tubular member **6** is fixed a generally cylindrical tubular member **17** having formed therein on the one hand a lateral port **18** communicating with the bottom of the reservoir **1** for the lubricant and, on the other hand, an axial bore **19** in which the compression piston **4** is reciprocated so as to draw in lubricant through the admission port **18** during its upward induction strokes and to force this lubricant, through valve means to be described presently, during the downward compression strokes of the piston.

At the bottom end of tubular member **17** is secured a member **20** having a frusto-concial lower portion and an axial bore of relatively small diameter **21**.

The tapered lower surface of member **20** is adapted to bear on a circular seat **22** formed in the body **23** of the delivery valve **24**.

Fluid tight engagement between the frusto-conical portion of member **20** and its seat **22** is ensured initially by the pressure exerted by the spring **16** whereas during operation this pressure is supplemented by that of the lubricant since the diameter of the circular line of contact betwen the tapered lower surface of member **20** and seat **22** is smaller than that of the axial bore **19** of member **17**.

The scraper carried by the sleeve **7** consists of a pair of diametrally opposed arms **25, 25** extending down-

[redacted]

a port communicating with the lower portion of the interior of said container and having an outlet at its lower end communicating with the exterior of said container, a piston axially reciprocatable in said cylinder chamber for urging grease admitted through said port toward the lower end of said cylinder chamber, means for reciprocating said piston, a fork member having prongs extending downwardly from the upper portion of said container along and close to the inner walls of said container, a wire stretched tightly between the lower ends of said prongs and extending across said container, and means for rotating said fork member upon reciprocation of said piston, whereby upon each piston stroke said fork member and the wire secured to the lower ends of its prongs will be rotated about the axis of the piston.

2. In a pump for dispensing extremely thick grease, in combination, a cylindrical container having a vertical axis, means defining an axial cylinder chamber having a port communicating with the lower portion of the interior of said container and having an outlet at its lower end communicating with the exterior of said container, a piston axially reciprocatable in said cylinder chamber for urging grease admitted through said port toward the lower end of said cylinder chamber, means for reciprocating said piston, a fork member having prongs extending downwardly from the upper portion of said container along and close to the inner walls of said container, a wire stretched tightly between the lower ends of said prongs and extending across said container, a sleeve concentric with the axis of said piston and adapted to rotate upon reciprocation of said piston, said fork member being mounted for rotational movement upon rotational movement of said sleeve, whereby upon each piston stroke said fork member and the wire secured to the lower ends of its prongs will be rotated about the axis of the piston.

3. In a pump for dispensing extremely thick grease, in combination, a cylindrical container having a vertical axis, means defining an axial cylinder chamber having a port communicating with the lower portion of the interior of said container and having an outlet at its lower end communicating with the exterior of said container, a piston axially reciprocatable in said cylinder chamber for urging grease admitted through said port toward the lower end of said cylinder chamber, means for reciprocating said piston, a fork member having prongs extending downwardly from the upper portion of said container along and close to the inner walls of said container, a wire stretched tightly between the lower ends of said prongs and extending across said container, and means for rotating said fork member upon reciprocation of said piston, whereby upon each piston stroke said fork member and the wire secured to the lower ends of its prongs will be rotated about the

axis of the piston, a nozzle rigid with the bottom portion of said container and communicating with the lower end of said cylinder chamber, an axial passage in said nozzle having a diameter less than the diameter of said piston, a spring-loaded ball-valve mounted in said passage, a pair of lateral ducts leading from said nozzle, one of said lateral ducts providing the grease-delivering passage and the other leading to said container and providing a by-pass over-pressure passage connecting said nozzle to said container, and valve means located in said other duct and adapted to be controlled from the outside.

4. In a pump for dispensing extremely thick grease, in combination, a cylindrical container having a vertical axis, a cover for said container means defining an axial cylinder chamber having a port communicating with the lower portion of the interior of said container and having an outlet at its lower end communicating with the exterior of said container, a piston axially reciprocatable in said cylinder chamber for urging grease admitted through said port toward the lower end of said cylinder chamber, said piston being connected to a piston rod extending upwardly through said cover, a sleeve surrounding the upper portion of said piston rod, said sleeve being provided with a toothed end portion, and being formed with helicoidal slots in its side walls, a pin carried by said piston rod engaged in said slots, a ring member rotatably surrounding said sleeve and having teeth positioned to mesh with said toothed end portion whereby said ring is rotated upon rotation of said sleeve which in turn is rotated upon reciprocation of said piston rod, means for reciprocating said piston rod and its associated piston, a fork member having prongs extending downwardly from the upper portion of said container along and close to the inner walls of said container, a wire stretched tightly between the lower ends of said prongs and extending across said container, said fork member being carried by said ring member, whereby upon each piston stroke said fork member and the wire secured to the lower ends of its prongs will be rotated about the axis of the piston.

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